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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,127	08/16/2001	Joseph C. Chan	50R4781	4319

24955 7590 05/17/2005

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EXAMINER	
LEE, RICHARD J	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/932,127	CHAN, JOSEPH C.	
	Examiner	Art Unit	
	Richard Lee	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2005 and 22 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The request filed on February 22, 2005 for a Request for Continued Examination (RCE) is acceptable and a RCE has been established. An action on the RCE follows.

2. Due to the newly discovered Moni et al reference, the following new grounds of rejections are deemed proper. The Examiner apologizes for any inconvenience that this may have caused for the applicant.

3. The applicant is informed that the amendment filed February 4, 2005 is not in compliance with 37 CFR 1.52(b). Specifically, the claims in the amendment filed February 4, 2005 are not presented with lines one and one half or double spaced as required by 37 CFR 1.52(b). The applicant is reminded that any future amendment(s) to/presentation of the claim(s) should therefore be presented in the format with lines one and one half or double-spaced.

4. Claims 3-8, 10, 11, 17, and 18 are objected to because of the following informalities:

(1) claim 3, line 3, after "macroblock", "." should be properly inserted for clarity;

(2) claim 4, line 2, after "changed", "." should be properly inserted for clarity;

(3) claim 5, line 2, after "boundaries", "." should be properly inserted for clarity;

(4) claim 10, line 2, "may be" should be changed to "is" for positive recitation;

(5) claim 17, line 2, after "macroblocks", "." should be properly inserted for clarity.

Appropriate correction is required.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 5-14, and 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailean et al of record (5,724,369) in view of Zhao et al of record (US 2003/0067981 A1) and Moni et al (6,697,126).

Brailean et al discloses a method and device for concealment and containment of errors in a macroblock based video coded as shown in Figures 3, 4, and 6, and substantially the same method for concealing errors in texture partition of a video packet, error concealment system for texture partition of a video packet, and computer readable medium containing executable instructions which, when executed in a processing system, causes the system to conceal errors in texture partition of a video packet as claimed in claims 1-3, 5-14, and 17-25, comprising substantially the same error location detector (i.e., 314 of Figure 6, and see column 5, lines 1-20, column 6, lines 25-47) to receive video packets, and determine a particular macroblock within the texture partition where error is detected, and determining a particular location within the texture partition where error is detected; an error concealment element (i.e., 316 of Figure 3, 620 of Figure 6, and see column 5, lines 21-39, column 7, lines 9-65) to conceal the error starting at the particular macroblock, and to conceal the error in texture data starting at the particular location; an image smoothness evaluator (i.e., MSE of macroblocks, see column 7, line 41 to column 8, line 6) to evaluate the concealed macroblocks, and evaluating image smoothness of the concealed texture data; repeating the concealing and evaluating with one more macroblock added prior to the previous particular macroblock/location, the repeating done until all macroblocks/texture data units in the texture partition have been concealed (i.e., errors within the video sequence are concealed, which includes the previous error detected macroblock, and any subsequent error detected macroblocks, see column 3, lines 25-32, and MSE of macroblocks,

column 7, line 41 to column 8, line 6); storing all decoded macroblocks of texture data in the texture partition up to the particular macroblock (i.e., 618 of Figure 6, and see column 7, line 41 to column 8, line 6); the concealing the error starting at the particular macroblock includes performing motion compensated temporal replacements of macroblocks starting at the particular macroblock (i.e., as provided by 608 of Figure 6); the evaluating image smoothness of concealed macroblocks includes computing smoothness of macroblock boundaries, wherein the smoothness of macroblock boundaries is measured by summing pixel value mismatches between macroblock boundary pixels, wherein the summing pixel mismatches includes storing partial mismatch values, wherein the summing pixel value mismatches includes summing squares of the pixel value differences (i.e., calculating MSE for macroblock boundaries, see column 7, line 23 to column 8, line 6); wherein the pixel value mismatches are computed by reusing the partial mismatch values from previous iterations (i.e., the same MSE mismatch equation (2) at column 7, line 56 is used from frame to frame, thereby providing the computation by reusing the partial mismatch values from previous iterations); detecting the error in the video packet (i.e., as provided by 314 of Figure 6), the detecting includes detecting invalid variable length code and inconsistent resynchronization header information (see column 5, lines 21-39, column 6, lines 25-47); and selecting a set of macroblocks includes recovering some of the stored decoded macroblocks, wherein the some of the stored decoded macroblocks include decoded macroblocks up to a macroblock that produced the best image smoothness (i.e., as provided by 350 of Figure 3 and 618 of Figure 6, see column 5, lines 21-39, column 7, line 23 to column 8, line 6).

Brailean et al does not particular disclose, though, the followings:

(a) the evaluator at least in part summing squares of element value differences in a manner that weighs element value mismatches between macroblocks belonging to different video packets differently, evaluating image smoothness of concealed macroblocks/texture data at least in part by summing squares of pixel value differences that weighs pixel value mismatches between macroblocks belonging to different video data structures/video packets differently, and wherein the pixel value mismatches between macroblocks that belong to different video packets may be configured to weigh more than the pixel value mismatches between macroblocks that belong to the same video packets as claimed in claims 1, 9, 10, 19, 21, and 24; and

(b) a selector to select a set of macroblocks/texture data units, including a combination of decoded and concealed macroblocks/texture data units, that produces best image smoothness as claimed in claims 1, 9, 19, 21, and 24.

Regarding (a), Moni et al discloses an intra-frame video error concealment system as shown in Figures 2-8, and teaches the conventional selective assignment of weights for blocks of pixels at the boundary of an error block within a video packet in order to provide a smooth transition from non-erroneous pixels to pixels corresponding to the error segment, with greater weights being assigned at the boundary between a non-erroneous pixel and a pixel corresponding to the error block (see 82, 84, 86, 88, 94, 96, 98 of Figure 2, 104, 106, 108, 114, 116, 118, 1124, 128 of Figure 3, column 7, lines 30-53, column 7, line 63 to column 8, line 45, column 9, lines 10-44, column 10, line 15 to column 11, line 9) . It is hence considered obvious to provide the selective assignment of weights for blocks as taught by Moni et al as part of the summing squares of the pixel/element value differences within Brailean et al (i.e., MSE mismatch equation

(2) of Brailean et al, column 7, line 56) to thereby provide the weighing of element value mismatches between macroblocks belonging to different video packets differently, and evaluating image smoothness of concealed macroblocks/texture data at least in part by summing squares of pixel value differences that weighs pixel value mismatches between macroblocks belonging to different video data structures/video packets differently, as claimed. And in view of the selective assignment of weights for blocks within a video packet of Moni et al to be provided within the summing of squares of pixel/element value differences of Brailean et al, it is considered obvious that the pixel value mismatches between macroblocks belonging to different video packets in the combination of Moni et al and Brailean et al may be configured to weigh more than the pixel value mismatches between macroblocks that belong to same video packets. In other words, since Moni et al teaches the general selective assignment of weights for blocks within a video packet, any desired weight selection of blocks within a video packet may be performed, which includes configuring weight more to macroblocks belonging to different video packets as compared with macroblocks belonging to the same video packet as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Brailean et al and Moni et al references in front of him/her and the general knowledge of the concealment of macroblocks within video packets, would have had no difficulty in providing the selective assignment of weights for blocks at the boundary of an error block within a video packet as taught by Moni et al as part of the summing squares of the pixel/element value differences within Brailean et al (i.e., MSE mismatch equation (2) of Brailean et al, column 7, line 56) to thereby provide the weighing of element value mismatches between macroblocks belonging to different video packets differently, and evaluating image smoothness of concealed macroblocks/texture

data at least in part by summing squares of pixel value differences that weighs pixel value mismatches between macroblocks belonging to different video data structures/video packets differently for the same well known selective quality of video and smooth transition from non-erroneous pixels to pixels corresponding to the error segment purposes as claimed.

Regarding (b), Zhao et al discloses a system and method for performing bit rate allocation for a video data stream, and teaches the conventional use of a combination of features for concealing errors in a video packet, such as a combination of decoded and concealed macroblocks/texture data unit that produces best image smoothness (i.e., replacing the unrecoverable macroblock with a corresponding macroblock from a previous frame and temporal concealment, see sections [0172] and [0174] of page 13). Therefore, it would have been obvious to one of ordinary skill in the art, having the Brailean et al, Moni et al, and Zhao et al references in front of him/her and the general knowledge of video error concealment techniques, would have had no difficulty in providing the combination of decoded and concealed macroblocks/texture data units that produces best image smoothness as taught by Zhao et al as part of the error concealment technique within the video decoder as shown in Figure 6 of Brailean et al for the same well known concealment of video errors with a combination of features in order to produce the best image purposes as claimed.

7. Claims 4, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailean et al, Zhao et al, and Moni et al as applied to claims 1-3, 5-14, and 17-25 in the above paragraph (6), and further in view of Talluri et al of record (6,111,916).

The combination of Brailean et al, Zhao et al, and Moni et al discloses substantially the same method for concealing errors in texture partition of a video packet, error concealment

system for texture partition of a video packet, and computer readable medium as above, but does not particularly disclose performing motion compensated temporal replacements is done for those macroblocks whose motion vectors have changed; wherein the detecting includes detecting receipt of out-of-range motion vectors; and wherein the detecting includes DCT coefficient counts greater than a predetermined amount of approximately 64 pixels for a macroblock and Y/Cr/Cb pixel values out of range as claimed in claims 4, 15, and 16. However, Talluri et al discloses an error resilient encoding and teaches the conventional detection of out of range motion vectors and DCT errors (see column 3, lines 45-56, column 7, lines 18-52). And, in the event that motion vector error is detected as taught by Talluri et al, it is considered obvious that the particular motion compensated temporal replacements for macroblocks as disclosed in both Brailean et al and Zhao et al (see 608 of Figure 6 of Brailean et al and section [0172] at page 13 of Zhao et al) may certainly be provided as the desired error concealment technique. Therefore, it would have been obvious to one of ordinary skill in the art, having the Brailean et al, Zhao et al, Moni et al, and Talluri et al references in front of him/her and the general knowledge of error detections within video coders/decoders, would have had no difficulty in providing the error detecting of motion vectors and DCT coefficients as taught by Talluri et al as part of the error detection process within the combination of Brailean et al and Zhao et al so that error concealment may further be provided to conceal the detected errors purposes as claimed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Lee whose telephone number is (571) 272-7333. The Examiner can normally be reached on Monday to Friday from 8:00 a.m. to 5:30 p.m, with alternate Fridays off.

RICHARD LEE
PRIMARY EXAMINER

Richard Lee/rl

5/12/05